



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,462	10/29/2003	Jene A. Golovchenko	HVD2093	5987

26247 7590 12/22/2005

THERESA A LOBER
T.A. LOBER PATENT SERVICES
45 WALDEN ST
CONCORD, MA 01742

EXAMINER

RIELLEY, ELIZABETH A

ART UNIT	PAPER NUMBER
----------	--------------

2879

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/696,462	GOLOVCHENKO ET AL.	
	Examiner	Art Unit	
	Elizabeth A. Rielley	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 1-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/5/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Claims 16-30 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 12/5/2005.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-11, 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Brown et al (US 6297063).

In regard to claim 1, Brown et al ('063) teach a carbon nanotube device comprising: a support structure (10; column 4 line 10 to column 5 line 27) including an aperture extending from a front surface to a back surface of the structure (see figure 1a); and at least one carbon nanotube extending across the

Art Unit: 2879

aperture and accessible through the aperture from both the front surface and the back surface of the support structure (14; column 1 lines 26-52).

In regard to claims 2 and 3, Brown et al ('063) teach the carbon nanotube comprises a single-walled carbon nanotube or the carbon nanotube comprises a multi-walled carbon nanotube (column 6 lines 15-47).

In regard to claims 4 and 5, Brown et al ('063) teach the carbon nanotube comprises a semi conducting carbon nanotube; the carbon nanotube comprises a metallic carbon nanotube (column 5 lines 28-55).

In regard to claim 6, Brown et al ('063) teach the at least one carbon nanotube comprises a plurality of carbon nanotubes (see figure 1).

In regard to claim 7, Brown et al ('063) teach the support structure comprises a substrate (see figure 1).

In regard to claim 8, Brown et al ('063) teach the support structure comprises a semi conducting substrate¹ (column 4 lines 38-63).

In regard to claims 9-11, Brown et al ('063) teach the support structure comprises a membrane; the membrane comprises a silicon nitride membrane; the membrane comprises a silicon dioxide membrane (26; column 4 lines 24-37).

¹ <http://www.onelook.com/?w=substrate&ls=a>. The contact pads are considered a substrate.

Art Unit: 2879

In regard to claim 13, Brown et al ('063) teach at least one pair of electrically conducting contact pads (12a, 12b; figure 1a) disposed on the support structure and separated by the aperture (see figure 1a), with each end of a carbon nanotube located at a contact pad (see figure 1c).

In regard to claim 14, Brown et al ('063) teach each carbon nanotube end disposed on top of a contact pad (see figure 3b).

In regard to claim 15, Brown et al ('063) teach at least one pair of electrically conducting contact pads comprises a plurality of pairs of contact pads disposed at locations around the aperture (see figure 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al (US 6297063) in view of Bradley et al (US 20040043527).

Brown et al teach all the limitations set forth, as described above, except the support structure is aligned between a source of electrons and an electron detector for transmission electron microscopy of the carbon nanotube. Bradley et al ('527) teach a support structure holding a nanotube (230; paragraphs 55-56) is aligned between a source of electrons (150, 240) and an electron detector (260) for transmission electron microscopy of the carbon nanotube in order to decrease the electrical resistance of the measuring

Art Unit: 2879

device (paragraph 44). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the nanotube structure of Brown et al ('063) with the measuring device of Bradley et al ('527). Motivation to combine would be to improve the measuring device's accuracy.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth A. Rielley whose telephone number is 571-272-2117. The examiner can normally be reached on Monday - Friday 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Elizabeth Rielley

Examiner
Art Unit 2879

msz 12/20/05
MARICELI SANTIAGO
PRIMARY EXAMINER